



NASA STTR 2011 Phase I Solicitation

T7.02 Payload Integration and Payload Launch Preparation Interface Standards

Lead Center: KSC

This STTR topic seeks commercial solutions that will allow and encourage standardization of key payload to launch vehicle, and subsystem interface standards to reduce the cost associated with analysis, integration, and preparation required to design and then configure space systems for launch. The goal is a set of launch vehicle adapters, processes, and avionics interface standards that can be collectively used to facilitate spacecraft and subsystem design while reducing testing duration and complexity, overall reducing mission risk and while enabling novel mission concepts.

These sets of systems will focus on new standards for payload in the following mass ranges:

- 1 to 10kg.
- 11 to 50kg.
- 51 to 100kg.
- 101 to 180kg.

These ranges have been identified as the regions where critical technologies demonstrations and new space technologies could be used to increase TRL level at a lower cost with reduced risk. Enabling these capabilities will allow space craft developers the ability to design to a specific mass range that will result in on orbit research.

This STTR will be used to evaluate each of the current and future launch vehicles in determining where cross cutting standards can be applied to the entire NASA launch vehicle fleet.

The STTR has been classified as highly desirable. This rating was determined because there are adapters in place that could support the missions. However, to have multiple systems across multiple launch vehicles will contribute

to higher cost for integration of that mission. By having standards amongst the space craft and adapter community will reduce the per kilogram cost to orbit.

A significant fraction of mission costs are typically unique designs and approaches to perform relatively routine functions such as launch accommodations and subsystem-to-subsystem interface and communications. By standardizing many of these approaches, spacecraft and payload developers can design their systems with an expectation of a predictable, low-cost integration flow. Launch service providers can mitigate mission risk through the use of predictable and proven interfaces standardized to streamline analytical/physical integration processes and test flows.

Specific areas of interest:

- Launch adapters and systems and associated spacecraft standards.
- Standardized spacecraft and/or payload integration test flows, processes and qualification techniques.
- Standardized electrical interface standards, sometimes known as plug and play electrical power and data bus standards for streamlined subsystem integration.

Priority should be given to practical solutions that:

- Enable low-cost and reliable reusable standards and adapter systems.
- Demonstrate a higher likelihood of being incorporated into a wide number of commercial or government space access system, or systems.
- Can achieve flight or high-fidelity ground-based demonstrations within the next three years; longer-term development proposals will be accepted, but will be considered at a lower priority for funding.